

REMARKS

Claims 2-3 and 5-6 remain in this application. Claims 1 and 4 were previously canceled. Reconsideration of the application is requested.

Independent claim 2 is now rejected under 35 U.S.C. § 103(a), together with dependent claims 3 and 5, as unpatentable over either the Bleuel et al., Fevre et al., and Podhorsky et al. documents relied on previously or the Bleuel et al., Fevre et al., and Podhorsky et al. documents relied on previously and further in view of newly applied U.S. Patent 5,235,734 to DuRocher et al. Reconsideration is requested.

In normal use of a vehicle, steering wheel operations cause a steering column to move slightly due to certain directional loads. Vibrations occurring while the vehicle operates, commonly irregular vibrations, also cause the steering column to move slightly. Depending on loads applied through a steering wheel by a user, three loads are usually transmitted to a bracket through a steering column jacket. These loads are an axial load directed along a column jacket axis, a moment load resulting from a moment acting upwardly and downwardly, and a torque load produced by a rotating or twisting moment.

Since joint strength produced by crimping is lower than that produced by welding and other such procedures, it is desirable to keep excessive loads from acting on crimped joints. Accordingly, a steering column produced in the manner claimed has a bracket that is crimped at two locations arranged along an axis of the column jacket. This results in a higher joint strength between the bracket and the column jacket against an axial load acting on that column jacket. When

crimping the bracket projections, moreover, since the column jacket is supported by a die, joint strength between the bracket and the column jacket is further increased.

After adjusting a steering wheel, operation of the steering wheel by a user causes the steering column to move slightly due to loads acting upwardly or downwardly on that steering column. As a result, the steering column is subjected to moment loading. Vibrations produced during vehicle operation cause the steering column to move slightly vertically and horizontally, again subjecting the steering column to moment loading. Consequently, the bracket of the claimed steering column assembly method is crimped at two locations arranged along the column jacket axis, which results in increased joint strength between the bracket and the column jacket against the moment loads.

Further, in the claimed method, an outer surface of the column jacket is formed with planar surfaces extending parallel to each other, and the pair of projections are crimped toward a center of the column jacket. Since protrusions provided in the projections extend in a direction that intersects a moment load direction, the joint strength is reinforced against a moment load that is input upwardly or downwardly at the bracket joints.

Finally, concerning torque load, a steering column produced in the manner claimed has a bracket that is crimped at two spots arranged along the column jacket axis. This results in a higher joint strength between the bracket and the column jacket. As noted previously, joint strength produced by crimping is typically lower than that produced by welding and similar processes, and,

accordingly, excessive loads in crimped joints should be avoided as much as possible. The bracket and the column jacket do not undergo relative rotation, moreover, since planar outer surfaces of the column jacket are in close contact with planar inner surfaces of the bracket. As a result, torque loads do not significantly influence the crimped joints, and a higher integrity of the joint between the bracket and the column jacket is provided.

The Bleuel et al. patent concerns a steering column in which attachment of projections to a column jacket is performed by welding. Nothing in the Bleuel et al. patent disclosure concerns crimping a pair of projections at two spots arranged along a column jacket axis.

The Fevre et al. system includes a bracket having no projections at its upper end. Attachment of the Fevre et al. bracket to a column jacket is performed by welding or crimping. There is nothing in the Fevre et al. patent disclosure that concerns crimping a pair of projections at two spots arranged along the axis of the column jacket.

Finally, the Podhorsky et al. method involves attachment of heat exchanger ribs to heat exchanger tubes by crimping. In normal heat exchanger use, however, elements of the heat exchanger are not subjected to loads causing movement of those elements. While crimped joints may be suitable for a heat exchanger construction in which elements are not subjected to movement, crimping as contemplated in the Podhorsky et al. disclosure is considered inappropriate for use with steering columns.

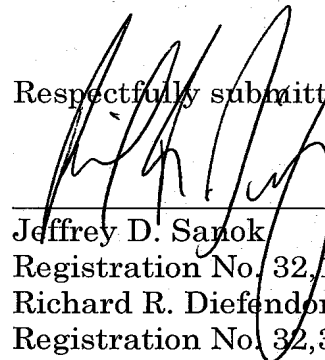
It is respectfully submitted that the Bleuel et al., Fevre et al., and Podhorsky et al. disclosures, considered together, for reasons discussed above, fail to suggest a steering column assembling method including, in addition to the other acts or operations specified, the particular acts or operations of forming a pair of flat surfaces back to back on an outer surface of a cylindrical column jacket, forming a pair of joint projections comprising a pair of flat inner surfaces conforming to the pair of flat surfaces of the column jacket on a bracket, and crimping the projections into the flat surfaces of said column jacket as now particularly defined by claim 2 above. Neither the newly applied DuRocher et al. patent relied on nor the Evans patent, which is relied on in section 4 of the Office Action, together with the other four documents noted, to again reject claim 6, suggests a steering column assembly method including the forming and crimping acts or operations now particularly defined by claim 2 above, and claim 2 above is considered patentable. The rest of the claims remaining in this application are dependent claims and should be patentable as well.

This application should now be in allowable condition. If there are any questions regarding this Reply or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an extension of time sufficient to effect a timely response. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #038917.55521US).

June 10, 2008

Respectfully submitted,



Jeffrey D. Sanok
Registration No. 32,169
Richard R. Diefendorf
Registration No. 32,390

CROWELL & MORING LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
JDS:RRD:rd